great importance of this faculty. By way of explanation, Dr. Gould suggests, that, without the faculty of finding the way homeward, the sphere of an animal's life would be very narrow. The maintenance of the species would develop the power of seeking new fields and the power to turn homewards. The ordinary senses cannot account for this homing instinct, as actual experiments have shown. Dr. Gould sees here the true sixth sense, and regards it as a sensibility to changes in electric and magnetic tension, due to position on the earth's surface. The home is the animal's north pole. By habit, it is accustomed to the magnetic conditions there, but when away is restless, and finds its way homeward by this mysterious compass. Dr. Gould connects with this some fanciful speculations as to the import of the pineal gland as a possible magnetic organ, and some hints as to the physical nature of homesickness in mankind.

ELECTRICAL NEWS.

A Novel Telephone.

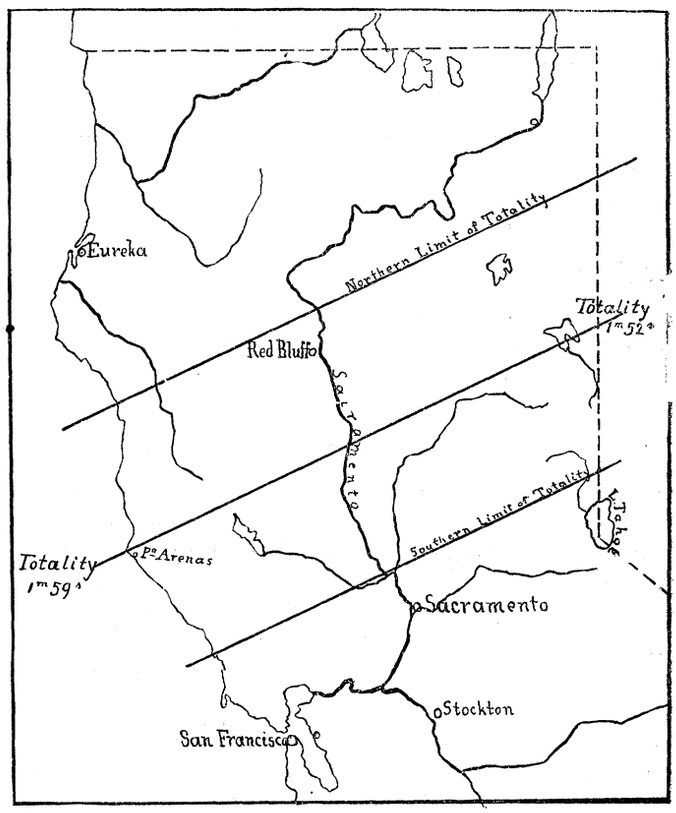
WE take the following from a recent issue of the New York *Electrical Review*: "The Lowth stettio-telephone hails from Chicago, and is a combined transmitter and receiver. A hollow extension about four inches long is attached to the receiver, from the end of which a small button protrudes slightly. The button is placed against the throat near the vocal chords, and the receiver is held against the ear in the usual manner. When the operator speaks, the vibrations of the throat are transmitted with, it is said, distinct clearness. The instrument is operated by the muscular vibrations that accompany the utterance of words. The inventor, James Lowth, is said to have been experimenting and working on this instrument for over ten years. When he first applied for a patent, three years ago, the authorities at Washington thought him a crank, and refused to issue one. He attached the instrument to wires in the office, and asked over it, 'What do you think now?' Back over the wire came, 'I give in. It works perfectly.' Our Chicago informant says it has been successfully operated between that city and Milwaukee, and in Pittsburgh it worked over a line seventy-five miles in length, on which were twenty-five Bell instruments." While, if the evidence is correct, this instrument certainly works, yet it is difficult to see how sounds produced by changing the relative positions of the tongue, teeth, and lips, such as go to make up a large part of the human voice, are accurately transmitted by this telephone. Never having seen one of these instruments, we do not yet "give in."

FAURE'S NEW SECONDARY BATTERY. — In this battery M. Faure uses finely divided metals pressed together in a self-supporting mass, or metal plates are used having combined with them finely divided particles of the same metal. Each plate is surrounded by a sheet of prepared asbestos, the sheet being a thirty-second of an inch thick, dipped first into some soluble salt, and then into a solution of a soluble silicate capable of producing with the first an insoluble compound. In his cell M. Faure uses zinc combined with finely divided zinc, and copper combined with finely divided copper. The solution used is phosphate of potash. On subjecting such a cell to the action of the electric current, phosphate of copper is formed on the surface of the copper element. M. Faure then substitutes a fresh solution of phosphate of potash, and, upon discharging the battery, phosphoric acid is transferred from the solution to the zinc, and from the copper to the solution; so that the solution remains unchanged as regards its constituent elements. The preliminary preparation would be avoided if phosphate of copper were placed upon the copper element in the first instance; but phosphate of copper is not easy to obtain and manipulate, and the process described is said to accomplish the desired object.

AN ITALIAN COMMISSION ON ELECTRIC TRACTION. — The Società Anonima degli Omnibus of Milan some time ago selected three engineers to travel through Europe, inspect the various electric-traction roads in operation, and report on the adaptability to the tramways in Milan. The main part of the report of the experts is taken up with the description and discussion of storage-battery systems; overhead, underground, and rail conductor systems being only incidentally mentioned. The commission was unable to make a report on any line that was a complete financial success. The system in Brussels has not given perfect satisfaction, although improvements have been made that will reduce the cost. The road is on a small scale, however, and it does not necessarily follow that it would not pay, even now, if it was on a larger scale. The road, too, is a difficult one, with long grades of over three per cent. A careful study was made of the different types of accumulators in use at present, and an estimate is made of the comparative cost of storage-battery traction, as compared with that of horses. As a result, the commission advised that electric cars be tried, and states that it would be an honor to Milan, which was one of the first cities in the world to adopt electric-lighting on a large scale, to be also one of the first to utilize electricity for the propulsion of its tramcars.

NOTES AND NEWS.

MR. H. P. TUTTLE has recently indicated on a map of California the shadow path of the total eclipse of the sun which occurs on Jan. 1, 1889, and through his kindness we are enabled to reproduce this map. The cone of darkness will first appear on the western



coast of California, the central line passing near Punta Arenas. The space within the lines marked 'northern limit' and 'southern limit' indicates that in which the eclipse will be total. The duration of the eclipse will be about two minutes.

— During the past week the Society of Amateur Photographers of New York has been holding at its rooms, 122 West 36th Street, an informal exhibition of prints, the work of members of the society. The exhibition has proved very successful; so much so, that, at the request of many visitors, the exhibition will continue until Saturday, Dec. 15. About six hundred pictures are exhibited, and include views in many parts of Europe, China, Japan, Corea, the United States, historical buildings in this city, flash-light pictures, etc. The rooms will be open from 10 A.M. to 6 P.M., and from 7 to 10 P.M. every day and evening this week, except Tuesday evening. There is no charge for admission, and non-members of the society wishing to see the exhibition can obtain tickets by writing to the secretary of the society.